UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,647	09/10/2003	Mark Yarkosky	2052	3662

28005 7590 12/29/2005

SPRINT
6391 SPRINT PARKWAY
KSOPHT0101-Z2100
OVERLAND PARK, KS 66251-2100

EXAMINER	
AJIBADE AKONAI, OLUMIDE	
ART UNIT	**PAPER NUMBER**
2686	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 10/659,647	Applicant(s) YARKOSKY, MARK	
	Examiner Olumide T. Ajibade-Akonai	Art Unit 2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 7, 9-12, 14-24, and 26-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7,9-12,14-24 and 26-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** in view of **Han et al 20030143948 (hereinafter Han)**.

Regarding **claim 1**, Schmutz discloses in a cellular network in which a mobile Station (mobile units 18, see fig. 1, col. 4, lines 29-31) communicates with base stations (base transceiver stations BTS's 15, see fig. 1, col. 4, lines 26-27) through a wireless repeater (repeaters 12, see fig. 1, col. 4, lines 18-20), a method comprising: receiving wireless signals (downlink signals are sent from the transceiver station 15-1 to repeater 12-1, the signal can be a test signal or the signal used for communication, see figs. 5 and 6, col. 8, lines 38-45 and col. 10, lines 9-14) determining a signal to noise ratio (repeater 12 determines carrier-to-noise C/N ratio of downlink signal from the base transceiver station, see fig. 5, col. 8, lines 38-48), and based on the signal to noise ratio, the wireless repeater repeats the wireless signals at one of the increments (the power

levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/N on the channel if the C/N is not within an acceptable threshold, see fig. 5, col. 9, lines 1-6).

Schmutz fails to disclose causing an antenna of the wireless repeater to sweep over a coverage area through increments, and at each increment, receiving wireless signals.

In the same field of endeavor, Han discloses causing an antenna (antenna, see p.2, [0026]) of the wireless repeater (RF repeater, see p.2, [0023]) to sweep over a coverage area through increments (antenna of the RF repeater moves in various directions, see p.2, [0026]), and at each increment, receiving wireless signals (the downlink input signal is received by the RF repeater at regular intervals as the antenna moves in various directions, see fig. 3, p.2, [0026]-[0027]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Han with Schmutz for the benefit of detecting base station direction in an RF repeater.

Regarding **claim 7**, Schmutz discloses a method for dynamically directing a wireless repeater (repeaters 12, see fig. 1, col. 4, lines 18-20), the method comprising: receiving wireless signals (downlink signals are sent from the transceiver station 15-1 to repeater 12-1, the signal can be a test signal or the signal used for communication, see figs. 5 and 6, col. 8, lines 38-45 and col. 10, lines 9-14) using a directional antenna (directional antennas 13, see fig. 1, col. 4, lines 23), the wireless repeater determining carrier-to-cochannel interference ratios of the received wireless signals (repeater 12

determines carrier-to-cochannel C/I ratio of downlink signal from the base transceiver station, see fig. 5, col. 8, lines 38-48), and based on the carrier-to-co-channel interference ratios, directing the wireless repeater to radiate amplified wireless signals at a given increment (the power levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/I on the channel if the C/I is not within an acceptable threshold, see fig. 5, col. 9, lines 1-6).

Schmutz fails to disclose directing an antenna to increasingly sweep its coverage area across a given area, and at each increment, receiving wireless signals.

In the same field of endeavor, Han discloses directing an antenna (antenna, see p.2, [0026]) to increasingly sweep its coverage area across a given area wireless repeater (RF repeater, see p.2, [0023]) to sweep over a coverage area through increments (antenna of the RF repeater moves in various directions, see p.2, [0026]), and at each increment, receiving wireless signals (the downlink input signal is received by the RF repeater at regular intervals as the antenna moves in various directions, see fig. 3, p.2, [0026]-[0027]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Han with Schmutz for the benefit of detecting base station direction in an RF repeater.

Regarding **claim 12**, as applied to claim 7, Schmutz further discloses wherein directing the wireless repeater to radiate amplified wireless signals at a given increment comprises directing the wireless repeater to radiate the amplified wireless signals at an increment corresponding to a strong carrier-to-cochannel interference ratio (the power

levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/I on the channel if the C/I is not within an acceptable threshold, see fig. 5, col. 9, lines 1-6).

Regarding **claim 14**, as applied to claim 7, Schmutz further discloses radiating the amplified signals in a direction of a given sector of a given base station (repeater, receives radio signals from the mobile units 18 and forward the signals to a BTS 15 through its directional antenna, and the power levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/I on the channel if the C/I is not within an acceptable threshold, see fig. 5, col. 4, lines 31-35 and col. 9, lines 1-6).

Regarding **claim 16**, Schmutz discloses in a wireless repeater operable to radiate in a number of directions so as to provide a number of coverage areas (repeater stations 12 with omni-directional antennas 11 and directional antennas 13, see fig. 1, col. 4, lines 18-24), a method comprising: receiving wireless signals from a coverage area (downlink signals are sent from the transceiver station 15-1 to repeater 12-1, the signal can be a test signal or the signal used for communication, see figs. 5 and 6, col. 8, lines 38-45 and col. 10, lines 9-14), determining characteristics of the wireless signals (repeater 12 determines carrier-to-cochannel C/I ratio of downlink signal from the base transceiver station, see fig. 5, col. 8, lines 38-48), and based on the characteristics, directing the wireless repeater to radiate amplified wireless signals to one of the number of coverage areas (the power levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/I on the channel if the C/I is not within an acceptable threshold, see fig. 5, col. 9, lines 1-6).

Schmutz fails to disclose incrementally adjusting wireless repeater to receive wireless signals within the number of coverage areas.

In the same field of endeavor, Han discloses incrementally adjusting wireless repeater to receive wireless signals within the number of coverage areas (antenna of the RF repeater moves in various directions, and the downlink input signal is received by the RF repeater at regular intervals as the antenna moves in various directions, see fig. 3, p.2, [0026]-[0027]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Han with Schmutz for the benefit of detecting base station direction in an RF repeater.

Regarding **claim 18**, as applied to claim 16, Schmutz, as modified by Han discloses the claimed invention. In addition, Schmutz discloses a directional antenna (repeater directional antennas 13, see fig. 1, col. 4, lines 18-23).

Schmutz fails to disclose wherein incrementally adjusting the wireless repeater comprises rotating a directional antenna to sweep its coverage area over the number of coverage areas.

Han, however, further discloses wherein incrementally adjusting the wireless repeater comprises rotating an antenna to sweep its coverage area over the number of coverage areas (antenna of the RF repeater moves in various directions, and the downlink input signal is received by the RF repeater at regular intervals as the antenna moves in various directions, see fig. 3, p.2, [0026]-[0027]).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Schmutz and Han for the benefit of detecting base station direction in an RF repeater.

Regarding **claim 23**, Schmutz discloses a wireless repeater (wireless repeaters 12, see fig. 1, col. 4, lines 20-23) comprising: a donor antenna that is operable to communicate with a plurality of base stations and to receive wireless signals over a coverage area (directional antennas 13, see fig. 1, col. 4, lines 27), a mobile station modem that receives wireless signals from the donor antenna (inherent, since downlink signals are sent from the transceiver station 15-1 to repeater 12-1, the signal can be a test signal or the signal used for communication, indicating that a modem is required to perform the process, see figs. 5 and 6, col. 8, lines 38-45 and col. 10, lines 9-14) and identifies characteristics of the wireless signals (repeater 12 determines carrier-to-cochannel C/I ratio of downlink signal from the base transceiver station, see fig. 5, col. 8, lines 38-48), and a processor operable to record in data storage the characteristics of the wireless signals (CPU 64, DSPs 63, and shared memory 75, see fig. 4, col. 7, lines 56-67, col. 8, lines 1-15), and based on the characteristics, to direct the donor antenna to radiate amplified wireless signals at a given increment (power levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/I on the channel if the C/I is not within an acceptable threshold, see fig. 5, col. 9, lines 1-6).

Schmutz fails to disclose receiving wireless signals over a coverage area by incrementally sweeping across the coverage area.

In the same field of endeavor, Han discloses receiving wireless signals over a coverage area by incrementally sweeping across the coverage area (antenna of the RF repeater moves in various directions, and the downlink input signal is received by the RF repeater at regular intervals as the antenna moves in various directions, see fig. 3, p.2, [0026]-[0027]), and directing donor antenna to radiate amplified wireless signals at a given increment.

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Han with Schmutz for the benefit of detecting base station direction in an RF repeater.

4. Claims 9, 17 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** in view of **Han et al 20030143948 (hereinafter Han)** as applied to claims 7, 16 and 23 above, and further in view of **Chen et al (6,782,277)**.

Regarding **claim 9**, as applied to claim 7, Schmutz, as modified by Han discloses the claimed invention except wherein receiving the wireless signals by directing an antenna to incrementally sweep its coverage area across a given coverage area comprises the wireless signals from a plurality of directional antenna components, where each directional antenna component is operable to receive wireless signals from a given coverage area.

In the same field of endeavor, Chen et al teaches wherein receiving the wireless signals by directing an antenna to incrementally sweep its coverage area across a given coverage area comprises receiving the wireless signals from a plurality

of directional antennas (base station 102 with directional antenna 104 receives signals from subscriber stations 108a and 108b as signal beam 110 sweeps from sector 112a to sector 112b, see figs. 1 and 6, col. 5, lines 64-67, col. 6, lines 1-16), where each directional antenna component (antenna 620, see fig. 6, col. 17, lines 21-25) is operable to receive wireless signals from a given coverage area (active subscribers in the coverage area receive signals from the directional antenna of the bas station, see col. 6, lines 5-7).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen et al into the system of Schmutz and Han for the benefit of preventing interference to subscriber stations neighboring cells.

Regarding **claim 17**, as applied to claim 16, Schmutz, as modified by Han discloses the claimed invention except wherein incrementally adjusting the wireless repeater comprises directing a phased array antenna to sweep its coverage area over the number of coverage areas.

In the same field of endeavor, Chen et al discloses wherein incrementally adjusting the wireless repeater comprises directing a phased array antenna (signal beam shaping means 330 comprises a plurality of phase shifters 310 connected to an antenna 312, see fig. 3A, col. 11, lines 37-43) to sweep its coverage area over the number of coverage areas.

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen et al with Schmutz and Han for the benefit of providing an improved-capacity wireless system.

Regarding **claim 30**, as applied to claim 23, the combination of Schmutz and Han disclose the claimed invention except wherein the donor antenna is an antenna selected from the group consisting of an omni-directional antenna, a directional antenna, and a phased array antenna.

In the same field of endeavor, Chen et al further discloses wherein the donor antenna is an antenna selected from the group consisting of an omni-directional antenna, a directional antenna, and a phased array antenna (base station signal beams are created using mechanically steered directional antennas, see fig. 1a, col. 4, lines 14-21).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen et al with Schmutz and Han for the benefit of providing an improved-capacity wireless system.

5. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** in view of **Han et al 20030143948 (hereinafter Han)** as applied to claims 7 and 16 above, and further in view of **Lehmusto et al (5,907,794)**.

Regarding **claim 10**, as applied to claim 7, Schmutz, as modified by Han discloses the claimed invention except further comprising for each of the received wireless signals, storing in data storage a coverage area identifier corresponding to a coverage area from which the wireless signals were received.

In the same field of endeavor, Lehmusto et al discloses further comprising for each of the received wireless signals, storing in data storage (database maintained at the repeater, see col. 3, lines 24-32) a coverage area identifier subscriber stations corresponding to a coverage area from which the wireless signals were received (identifiers of the subscriber stations which operate on mode channels within the coverage area of the repeater are stored in the database, see col. 3, lines 24-32).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Lehmusto et al into the system of Schmutz and Han for the benefit of maintaining the information of subscribers in the coverage area in the repeater station.

Regarding **claim 20**, as applied to claim 16, the combination of Schmutz and Han disclose the claimed invention except further comprising for each of the wireless signals, storing in data storage a coverage area identifier corresponding to a coverage area from which the wireless signals were received.

In the same field of endeavor, Lehmusto et al discloses further comprising for each of the wireless signals (direct mode channels, see col. 3, lines 24-28), storing in data storage (database maintained at the repeater, see col. 3, lines 24-32) a coverage area identifier corresponding to a coverage area from which the wireless signals were received (identifiers of the subscriber stations which operate on mode channels within the coverage area of the repeater are stored in the database, see col. 3, lines 24-32).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Lehmusto et al with Schmutz and Han for the benefit of controlling a subscriber station operating on a direct mode channel in a radio system.

6. Claims 11, 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** in view of **Han et al 20030143948 (hereinafter Han)** as applied to claims 7 and 23 above, and further in view of **Kuwahara et al (20030162550)**.

Regarding **claim 11**, as applied to claim 7, Schmutz, as modified by Han discloses the claimed invention except further comprising determining a PN-offset of each received wireless signal.

In the same field of endeavor, Kuwahara et al discloses further comprising determining a PN-offset of each received wireless signal (base station **0** is a repeater that transmits pilot signals to the mobile terminal with a predetermined pilot PN offset, see p. 6, [0068]-[0069]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kuwahara et al into the system of Schmutz and Han for the benefit of providing a means for a wireless communications terminal to detect repeaters.

Regarding **claim 15**, as applied to claim 14, Schmutz, as modified by Han disclose the claimed invention except further comprising only repeating signals having a PN-offset of the given sector.

In the same field of endeavor, Kuwahara et al discloses further comprising only repeating signals having a PN-offset of the given sector (if base station transmitting PN offset signals is the one from which the terminal received the sync channel, and the terminal can observe only the sector of the channel, then the transmitting station is a repeater, see p. 5-6, [0061]-[0062]).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Schmutz, Han, and Kuwahara et al for the benefit of detecting a signal from a repeater.

Regarding **claim 24**, as applied to claim 23, the combination of Schmutz and Han disclose the claimed invention except wherein the characteristics are selected from the group consisting of PN-offsets of the wireless signals and signal to noise ratios Ec/1o for each PN offset.

In the same field of endeavor, Kuwahara et al discloses wherein the characteristics are selected from the group consisting of PN-offsets of the wireless signals (base station **0** is a repeater that transmits pilot signals to the mobile terminal with a predetermined pilot PN offset, see p. 6, [0068]-[0069]) and signal to noise ratios Ec/1o for each PN offset.

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kuwahara et al into the system of Schmutz and Han for the benefit of providing a means for a wireless communications terminal to detect repeaters.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** in view of **Han et al 20030143948**

(hereinafter Han) as applied to claims 16 above, and further in view of **Song et al (20040146013)**.

Regarding **claim 19**, as applied to claim 16, the combination of Schmutz and Han disclose the claimed invention except wherein the wireless repeater includes a plurality of antennas each operable to receive wireless signals from a given coverage area, and wherein incrementally adjusting the wireless repeater comprises selecting antennas from the plurality of antennas to receive the wireless signals.

Song et al, however, discloses wherein the wireless repeater includes a plurality of antennas (repeater 1030 includes two directional antennas, see fig. 10, p. 6, [0062]) each operable to receive wireless signals from a given coverage area (repeater 1030 with two directional antennas pointing at the access point and station 1050, see frig. 10, p. 6, [0062]), and wherein incrementally adjusting the wireless repeater comprises selecting antennas from the plurality of antennas to receive the wireless signals (repeater 130 receives up-link data from station 1050 via a first directional antenna, see p. 7, [0062]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Song et al with Schmutz and Han for the benefit of extending the coverage area in a wireless communication system.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** in view of **Han et al 20030143948 (hereinafter Han)** as applied to claims 23 above, and further in view of **Kita (5,534,872)**.

Regarding **claim 26**, as applied to claim 23, the combination of Schmutz and Han disclose the claimed invention except wherein at each increment, the donor antenna receives wireless signals and passes the wireless signals to the processor which records in the data storage the increment at which each wireless signal was received.

Kita, however, teaches wherein at each increment (distance measurement in correspondence with every ten degrees with respect to one rotation angle, see col. 4, lines 64-67), the donor antenna (antenna 1, see fig. 1, col. 3, line 57) receives wireless signals (electromagnetic waves received by antenna 1 when the antenna has been rotated by an angle, see col. 5, lines 34-42) and passes the wireless signals to the processor which records in the data storage (memory circuit 16, see fig. 1, col. 4, line 56) the increment at which each wireless signal was received (angle data is stored in memory circuit 16, and the angle data is derived from the rotation of the antenna to receive radio signals reflected from a target, see abstract, col. 4, lines 4-11 and lines 58-63).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kita into the system of Schmutz and Han for the benefit of measuring the distance for transmitting a radio signal every time the antenna is rotated by a rotation angle.

9. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** in view of **Han et al 20030143948 (hereinafter Han)** and **Lehmusto et al (5,907,794)** as applied to claim 20 above, and further in view of **Kuwahara et al (20030162550)**.

Regarding **claim 21**, as applied to claim 20, the combination of Schmutz, Han and Lehmusto et al disclose the claimed invention except wherein determining characteristics of the wireless signals comprises determining characteristics selected from the group consisting of a PN-offset of each wireless signal and a signal-to-noise ratio for each PN-offset.

In the same field of endeavor Kuwahara et al discloses wherein determining characteristics of the wireless signals comprises determining characteristics selected from the group consisting of a PN-offset of each wireless signal (base station **0** is a repeater that transmits pilot signals to the mobile terminal with a predetermined pilot PN offset, see p. 6, [0068]-[0069]) and a signal-to-noise ratio for each PN-offset.

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kuwahara et al into the system of Schmutz, Han, and Lehmusto et al for the benefit of providing a means for a wireless communications terminal to detect repeaters.

Regarding **claim 22**, as applied to claim 21, Schmutz inherently discloses wherein directing the wireless repeater comprises directing the wireless repeater to radiate the amplified wireless signals to a given coverage area having a coverage area identifier corresponding to a coverage area having the highest signal-to-noise ratio (the power levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/N on the channel if the C/N is not within an acceptable threshold, indicating that the uplink or downlink signal can be amplified based on the C/N ratio, see fig. 5, col. 9, lines 1-6).

10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** and **Han et al 20030143948 (hereinafter Han)** and **Kita (5,534,872)** as applied to claim 26 above, and further in view of **Wang et al (6,799024)**.

Regarding **claim 27**, as applied to claim 26, the combination of Schmutz, Han and Kita et al disclose the claimed invention except wherein the mobile station modem is a rake receiver that identifies the PN-offset in the wireless signals.

In the same field of endeavor, Wang et al teaches wherein the mobile station modem is a rake receiver (RAKE receiver, see col. 4, line 41) that identifies the PN-offset in the wireless signals (information bearing signal comprises a spreading code with a pseudo-random noise sequence that is identifiable by a rake receiver, see col. 4, lines 33-42).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Wang et al into the system of Schmutz, Han and Kita et al for the benefit of demodulating coded signals from the mobile station.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** and **Han et al 20030143948 (hereinafter Han)** as applied to claim 23 above, and further in view of **Chen et al (6,782,277)** and **Kita (5,534,872)**.

Regarding **claim 31**, as applied to claim 23, the combination of Schmutz and Han disclose the claimed invention.

Schmutz further discloses to disclose based on the characteristics of the wireless signals (repeater 12 determines carrier-to-noise C/N ratio of downlink signal from the base transceiver station, see fig. 5, col. 8, lines 38-48) directing an antenna to radiate the amplified wireless signals at a given phase (the power levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/N on the channel if the C/N is not within an acceptable threshold, indicating that the uplink or downlink signals to the base station transceiver can be amplified based on the C/N ratio, see fig. 5, col. 9, lines 1-6).

The combination of Schmutz and Han fail to disclose wherein the donor antenna is a phased array antenna.

In the same field of endeavor, Chen et al, teaches wherein the donor antenna is a phased array antenna (signal beam shaping means 330 comprises a plurality of phase shifters 310 connected to an antenna 312, see fig. 3A, col. 11, lines 37-43).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen et al into the system of Schmutz and Han for the benefit of providing an improved-capacity wireless system.

The combination of Schmutz, Han, and Chen et al, however, fails to disclose wherein the processor records the phase of the phased array antenna at which each wireless signal is received.

Kita, however, teaches wherein the processor (memory address control circuit 6, see fig. 1, col. 4, lines 10-12) records the phase of the phased array antenna at

which each wireless signal is received (angle data is stored in memory circuit 16, and the angle data is derived from the rotation of the antenna to receive radio signals reflected from a target, see abstract, col. 4, lines 4-11 and lines 58-63).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kita into the system of Schmutz, Han, and Chen et al for the benefit of measuring the distance for transmitting a radio signal every time the antenna is rotated by a rotation angle.

12. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schmutz et al 6,748,212 (hereinafter Schmutz)** and **Han et al 20030143948 (hereinafter Han)** and **Kita (5,534,872)** and **Wang et al (6,799024)** as applied to claim 27 above, and further in view of **Tak et al (6,567,460)**.

Regarding **claim 28**, as applied to claim 27, the combination of Schmutz, Han, Kita, and Wang et al disclose the claimed invention except wherein the processor records in the data storage the PN offsets and the signal to noise ratios of the wireless signals at each increment.

In the same field of endeavor, Tak et al teaches wherein the processor (controlling part 260, see fig. 2, col. 5, line 23) records in the data storage (storage area, see col. 5, line 28) the PN offsets (pilot PN offset, see col. 5, lines 33-35) and the signal to noise ratios of the wireless signals at each increment (database stores the PN offset and power information, see col. 5, lines 25-29).

It would therefore have been obvious to one of ordinary skill in the art to

combine the teaching of Tak et al into the system of Schmutz, Han, Kita, and Wang et al for the benefit of detecting the pilot PN offsets in a cordless telephone system.

Regarding **claim 29**, as applied to claim 28, Schmutz, further inherently discloses wherein the processor (CPU 64, see fig. 4, col. 7, lines 56-67, col. 8, lines 1-15) instructs the donor antenna to radiate the amplified wireless signals to a base station that corresponds to an increment where the mobile station modem detected a highest signal-to-noise ratio (the power levels on the uplink and downlink signals are adjusted to mitigate any adverse effects of the C/N on the channel if the C/N is not within an acceptable threshold, indicating that the uplink or downlink signals to the base station transceiver can be amplified based on the C/N ratio, see fig. 5, col. 9, lines 1-6).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cook et al (6,005,884) discloses a distributed architecture for a wireless data communications system.

Morimoto (6,778,809) discloses a mobile network for remote service areas using mobile stations.

Farley et al (6,816,732) discloses an optimal load-based wireless session context transfer.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olumide T. Ajibade-Akonai whose telephone number is 571-272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

OA

CHARLES APPIAH
PRIMARY EXAMINER